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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,673	08/13/2001	Thomas E. Miller	328 P 598	8170

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EXAMINER

ENSEY, BRIAN

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 07/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/928,673

Applicant(s)

MILLER, THOMAS E.

Examiner

Brian Ensey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 27, 28 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 2-26 and 29-35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: See item 60 on page 5, line 4. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma et al., U.S. Patent No. 5,812,598 in view of van Hal et al., U.S. Patent No. 6,658,134 in further view of Kaiserwerth et al., U.S. Patent No. 3,982,814.

Regarding claim 1, Sharma discloses an electroacoustic receiver for use in a hearing aid further including a power source, an audio input, and a signal processor wherein the receiver is driven with a switching signal having a carrier frequency (See Fig. 1 and col. 3, line 31 to col. 4,

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line 7). Sharma further discloses the receiver should provide low cost and lightweight construction with very little power consumption. Sharma does not expressly disclose the electroacoustic receiver comprises a pair of spaced permanent magnets; a coil having a tunnel therethrough, the coil comprising a conductive element having a thickness and formed into a winding, the winding including a plurality of spaced turns forming a plurality of winding layers, the plurality of spaced turns having a parasitic capacitance between individual turns and a predetermined winding pattern and a predetermined winding pitch for reducing the parasitic capacitance. However, van Hal discloses the electroacoustic receiver comprises a pair of spaced permanent magnets; a coil having a tunnel therethrough, the coil comprising a conductive element having a thickness and formed into a winding, the winding including a plurality of spaced turns forming a plurality of winding layers (See Fig. 1 and col. 2, lines 53-66). Further, Kaiserwerth teaches a specific construction of a coil with multiple turns, the plurality of spaced turns having a parasitic capacitance between individual turns and a predetermined winding pattern and a predetermined winding pitch for reducing the parasitic capacitance (See Figs. 1-7 and abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to wind the coil of van Hal as taught by Kaiserwerth to reduce or eliminate the unwanted parasitic capacitance in a hearing device.

Regarding claim 27, Sharma discloses a receiver as claimed. Sharma does not expressly disclose the predetermined winding pattern of the conductive element comprises an end portion including a first layer of turns adjacent the tunnel and wound about the tunnel in a first direction along a length of the tunnel and a second layer of turns disposed radially outwardly from the first layer of turns and wound about the first layer of turns in a second direction along the length of the tunnel which is opposite to the first direction, the winding pattern further comprising a

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second portion including a plurality of turns forming a plurality of layers and progressing in the first direction along the length of the tunnel. However, van Hal teaches a multiple layer coil wound along the length of the tunnel and successive layers disposed radially outwardly from the first layer of turns (See Fig. 1 and col. 2, lines 53-66). It would have been obvious to one of ordinary skill in the art at the time of the invention to wind successive layers in opposite directions to form even layers without cross-over from the first to last coils.

Regarding claim 28, Sharma discloses a method of reducing the current flow from and increasing the life of a battery provided in a hearing aid having an audio input, and a signal processor, the method comprising the steps of: providing an electroacoustic receiver driven by a switching signal having a carrier frequency (See Fig. 1 and col. 3, line 31 to col. 4, line 7). Sharma further discloses the receiver should provide low cost and lightweight construction with very little power consumption. Sharma does not expressly disclose the receiver comprises a pair of spaced magnets, a coil having a tunnel therethrough, and a reed armature having a central portion that extends through the coil; and a predetermined winding pattern of a conductive element including a plurality of successive turns forming a plurality of successive winding layers and a predetermined winding pitch. However, van Hal discloses the electroacoustic receiver comprises a pair of spaced permanent magnets; a coil having a tunnel therethrough, the coil comprising a conductive element having a thickness and formed into a winding, the winding including a plurality of spaced turns forming a plurality of winding layers (See Fig. 1 and col. 2, lines 53-66). Further, Kaiserwerth teaches a specific construction of a coil with multiple turns, the plurality of spaced turns having a parasitic capacitance between individual turns and a predetermined winding pattern and a predetermined winding pitch for reducing the parasitic capacitance (See Figs. 1-7 and abstract). It would have been obvious to one of ordinary skill in

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the art at the time of the invention to wind the coil of van Hal as taught by Kaiserwerth to reduce or eliminate the unwanted parasitic capacitance in a hearing device.

4. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Hal et al., U.S. Patent No. 6,658,134 in view of Brandt U.S. Patent No. 6,738,490.

Regarding claim 36, van Hal discloses an electroacoustic receiver driven with a switching signal having a carrier frequency, the electroacoustic receiver comprising: a pair of spaced permanent magnets; a coil having a tunnel therethrough, the coil comprising a wire having a thickness and formed into a wire winding, the wire winding including a plurality of individual turns; and a reed armature having a central portion which extends through the coil (See Fig. 1 and col. 2, lines 53-66). Van Hal does not expressly disclose a plurality of turns having a winding pitch wherein a space between individual turns is at least three times the thickness of the wire. However, Brandt teaches a coil with widely spaced windings (See Fig. 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to space windings at a distance equal to multiple thicknesses of the conductive element to prevent interaction between the windings and development of undesirable capacitance effects.

5. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Hal et al., U.S. Patent No. 6,658,134 in view of Aoi, Japanese Patent No. JP 5510549A.

Regarding claim 37, van Hal discloses an electroacoustic receiver comprising: a pair of spaced permanent magnets; a coil having a tunnel therethrough; and a reed armature having a central portion which extends through the coil (See Fig. 1 and col. 2, lines 53-66). Van Hal does not expressly disclose the coil comprises a plurality of spaced, electrically connected winding modules. However, Aoi teaches a plurality of electrically connected spaced winding modules each module comprising a plurality of individual turns forming a plurality of individual layers

(See Fig. 3 and abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize winding modules for multiple winding configurations for continuity of winding distribution.

6. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Hal et al., U.S. Patent No. 6,658,134 in view of Iida, Japanese Patent No. JP 2000058357A.

Regarding claim 38, van Hal discloses an electroacoustic receiver comprising: a pair of spaced permanent magnets; a coil having a tunnel therethrough, the coil comprising a winding of wire; and a reed armature having a central portion which extends through the coil (See Fig. 1 and col. 2, lines 53-66). Van Hal does not expressly disclose the winding having an end portion formed by a first plurality of individual turns originating at a point adjacent the tunnel and expanding radially outwardly to form a boundary layer, thereafter the wire being wound in second succession of individual turns to form a plurality of horizontally disposed layers; and a reed armature having a central portion which extends through the coil. However, Iida teaches a boundary layer and thereafter the wire being wound in second succession of individual turns to form a plurality of horizontally disposed layers (See Fig. 3 and abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a boundary layer and thereafter wind the wire in second succession of individual turns to form a plurality of horizontally disposed layers to reduce parasitic capacitance (See Abstract).

7. Claim 39 rejected under 35 U.S.C. 103(a) as being unpatentable over van Hal in view of Masahiko et al., Japanese Patent Application Publication JP 10-106855.

Regarding claim 39, van Hal discloses a receiver comprising: a pair of spaced permanent magnets; a coil having a tunnel therethrough and a reed armature having a central portion which extends through the coil. Van Hal does not expressly disclose the coil comprises a first wire

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winding layer, a second winding layer, and an insulating layer wherein the insulating layer is positioned between the first and second winding layers. However, Masahiko teaches insulating material between successive layers of the plurality of winding layers to reduce parasitic capacitances (See Fig. 1 and abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize insulating material between successive layers of the plurality of winding layers to reduce undesirable parasitic capacitances.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Hal in view of Saramoto et al., U.S. Patent No. 5,594,805.

Regarding claim 40, van Hal discloses a receiver comprising: a pair of spaced permanent magnets; a coil having a tunnel therethrough and a reed armature having a central portion which extends through the coil. Van Hal does not expressly disclose the coil having a plurality of alternating turns of conductive material and non-conductive material. However, Saramoto teaches a coil for a receiver driver coil having a plurality of alternating turns of conductive material and non-conductive material (See Fig. 7 and col. 9, lines 7-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize insulating material between successive spaced turns of the plurality of winding layers to reduce undesirable parasitic capacitances.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-40 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Ensey whose telephone number is 703-305-7363. The examiner can normally be reached on Mon-Fri: 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**Or faxed to:**

(703) 872-9306, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).

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BKE  
June 28, 2004

*Melur. Ramakrishnaiah*  
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PRIMARY EXAMINER